United States
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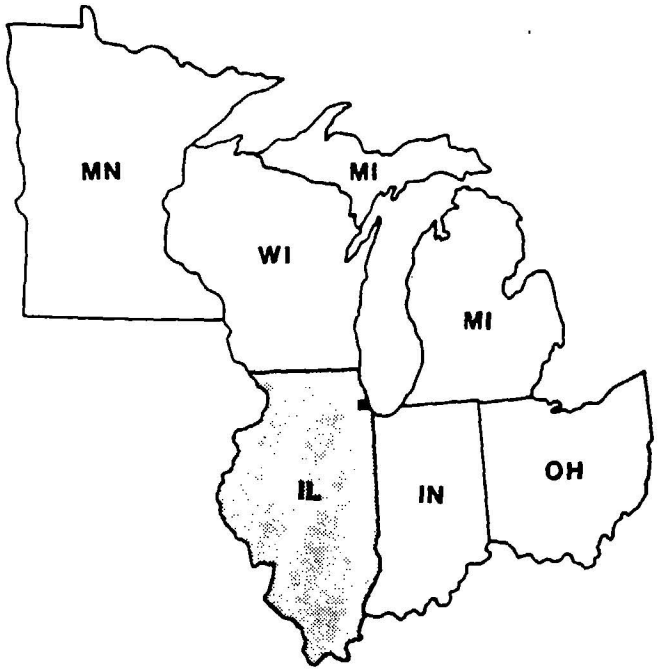
November 1986

Research and Development

EPA

AERIAL PHOTOGRAPHIC ANALYSIS OF U.S. SCRAP
Chicago, Illinois

EPA Region 5



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AERIAL PHOTOGRAPHIC ANALYSIS OF U.S. SCRAP

Chicago, Illinois

by

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Project Officer

C. E. Lake
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ENVIRONMENTAL MONITORING SYSTEMS LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
LAS VEGAS, NEVADA 89114

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ABSTRACT

This report presents the results of archival aerial photographs of the U.S. Scrap facility in Chicago, Illinois. The site covers approximately 4.5 acres and is under study by the U.S. Environmental Protection Agency's Region 5 Office. This report documents physical conditions and potential environmental hazards through time. Nine selected dates of black-and-white and color photographs acquired over a 45-year period (1938-1983) are the source data for the analysis.

The 1938 photograph showed no waste disposal activity. The facility consisted of a large malt processing building, smaller storage buildings, and 12 concrete storage silos. By 1959 dumping activity was observed at the site but no excavated pits, ponds, or lagoons were noted. Ground stains in the southwest corner of the site suggested liquid waste dumping. There were no disposal pits, ponds or lagoons observed in 1964. By 1967 the malt processing building had been dismantled, piles of rubble were noted throughout the site. A large solid waste landfill was at the north end of the site. By 1973 the disposal pit had been covered and a large waste burial mound had been deposited in the northern portion of the site. A group of objects, possibly containers or drums, were observed in the southwest corner of the site. The 1976 photograph showed all but eight of the concrete storage silos destroyed and a new building had been constructed in the central portion of the site near two pits containing liquid. By 1980 no evidence of solid or liquid disposal activity was noted. The site was abandoned, the disposal mounds closed, and vegetation overgrowing the site on the 1983 photograph.

The U.S. Environmental Protection Agency's Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, prepared this report for the Agency's Environmental Services Division in Region 5 and Office of Emergency and Remedial Response in Washington, D.C.

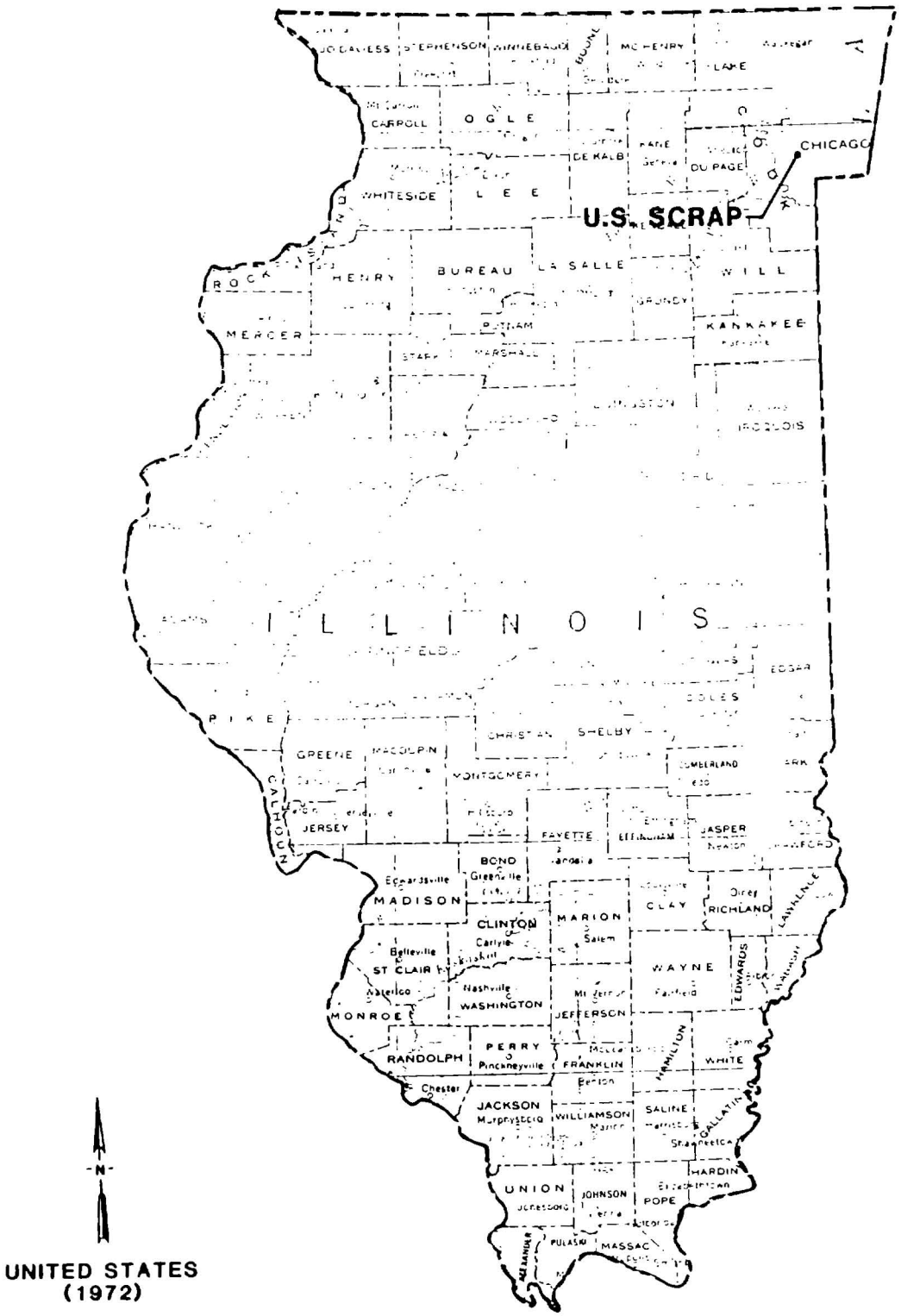

Figure 1. Study area regional location, Illinois. Scale 1:2,800,000.

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INTRODUCTION

This report presents a multidate analysis of the U.S. Scrap facility in Chicago, Illinois (Figures 1 and 2). The report documents physical conditions and potential environmental hazards at the study area through time. Nine selected dates of black-and-white and color aerial photographs acquired over a period of 45 years (1938-1983) are used in the analysis. The site is under study by the U.S. Environmental Protection Agency (EPA) Region 5 Office. The report will assist in field investigations and potential enforcement actions.

Topics addressed in this report include surface water contamination, indications of leachate, drainage patterns, disposal and/or burial of solid, liquid, and sludge waste, and visible vegetation stress associated with facility operations. The results of the analysis are shown on annotated overlays.

This report is one of two that examine sites in Indiana and Illinois under this project (Table 1).

The study area was covered by aerial photography acquired for a previous Las Vegas laboratory report, "Historical Photographic Inventory of Waste Disposal Areas, Southeast Chicago, Illinois, TS-AMD-83086, March 1984." In addition the site was covered in "U.S. Scrap - Chemical Dump Site, Calumet City, Illinois, TS-AMD-85768 and TS-AMD-85775."

The U.S. Environmental Protection Agency's Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, prepared this report for the Agency's Environmental Services Division in Region 5 and Office of Emergency and Remedial Response in Washington, D.C.

TABLE 1. REGION 5 SITES COVERED UNDER TS-AMD-86710†

Report serial number†	Site name	Location	Analysis type
1	Fort Wayne Reduction	Fort Wayne, IN	Intensive
‡2	U.S. Scrap	Chicago, IL	Intensive

†To identify individual reports, add the report serial number to the series number.
‡Site covered in this report.

METHODOLOGY

Stereoscopic pairs of historical aerial photographs are used to perform the analysis. Stereo viewing enhances the interpretation because it allows the analyst to observe the vertical as well as horizontal spatial relationships of natural and cultural features. Stereoscopy is also an aid in distinguishing between various shapes, tones, textures, and colors that can be found within the study area.

Evidence of waste burial is a prime consideration when conducting a hazardous waste analysis. Leachate or seepage resulting from burial and dumping of hazardous materials might threaten existing surface or ground-water sources. Pools of unexplained liquid are routinely noted because they can indicate seepage from buried wastes and may enter drainage channels that allow contaminants to move off the site. An excellent indicator of how well hazardous materials are being handled at a site is the presence or absence of spills, spill stains, and vegetation damage. Trees and other forms of vegetation that exhibit a marked color difference from surrounding members of the same species are labeled "dead," "stressed," or "damaged" based upon the degree of noticeable variation. Vegetation is so labeled only after consideration of the season in which the photographs were acquired.

The U.S. Environmental Protection Agency's Statement of Procedures on Floodplain Management and Wetlands Protection (Executive Orders 11988 and 11990, respectively) requires EPA to determine if removal or remedial actions at hazardous wastes sites will affect wetlands or floodplains and to avoid or minimize adverse impacts on those areas. To aid in compliance with these orders, significant wetland areas located within and adjacent to the sites have been identified and delineated. However, the sites have not been visited to verify the accuracy of wetland identification.

Drainage analysis determines the direction a spill or surface runoff would follow. Direction of drainage is determined from analysis of the photographs and from U.S. Geological Survey topographic maps. Whenever they are available, 7.5-minute quadrangle maps (scale 1:24,000) are used to show site location and to provide geographic and topographic information.

Results of the analysis are shown on annotated overlays attached to the photos. The prints in this report have been enlarged when appropriate to show maximum detail. The following table provides specifications of the photographs used in this report.

TABLE 2. AERIAL PHOTOGRAPHY SPECIFICATIONS

Site name, location, and geographic coordinates	Figure	Date of acquisition	Original scale	Film type†	Photo source‡
U.S. Scrap	3	November 14, 1938	1:20,000	B&W	NARS
Chicago, Illinois	4	March 29, 1952	1:23,600	B&W	EROS
(41°40.2'N 87°36.7'W)	5	September 14, 1959	1:23,890	B&W	EROS
	6	April 25, 1964	1:24,000	B&W	EROS
	7	August 28, 1967	1:23,890	B&W	EROS
	8	April 23, 1973	1:29,802	B&W	EROS
	9	April 7, 1976	1:24,000	B&W	Sidwell
	10	November 22, 1980	1:24,000	B&W	Sidwell
	11	July 23, 1983	1:12,000	CC	EMSL

†Film type identification:
B&W: Black-and-white
CC: Conventional color

‡Photo source identification:
NARS: National Archives and Records Service, Cartographic Branch; Washington, D.C.
EROS: U.S. Department of the Interior, Geological Survey, Earth Resources Observation Systems Data center, Sioux Falls, South Dakota.
Sidwell: The Sidwell Company, West Chicago, Illinois.
EMSL: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Las Vegas, Nevada.

One print from each data set used in the analysis is included in this report. The scales of these prints range from 1:5,800 (1 inch equals 480 feet) to 1:12,000 (1 inch equals 1,000 feet).

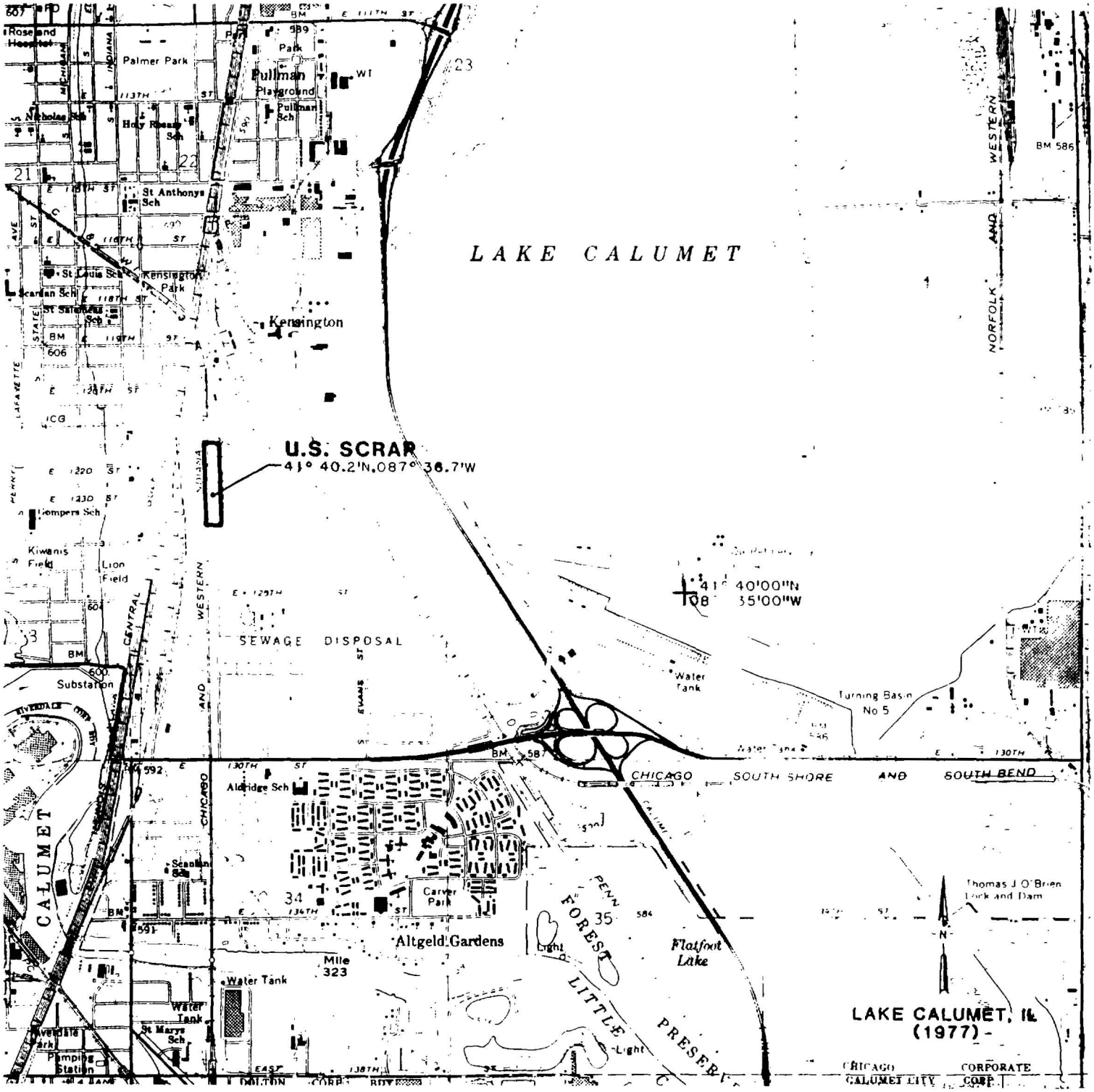


Figure 2. Local site location, Chicago. Approximate scale 1:24,000.

ANALYSIS SUMMARY

The U.S. Scrap disposal facility is located in Chicago, Illinois, approximately 1 mile west of Lake Calumet. The study area covers approximately 4.5 acres and was a malting plant before the property became a disposal site. Black-and-white and color photographs from 1938, 1952, 1959, 1964, 1967, 1973, 1976, 1980, and 1983 were used in this analysis.

The 1938 photograph showed no waste disposal activity. The facility consisted of a large malt processing building, smaller storage buildings, and 12 concrete storage silos. By 1959 dumping activity was observed at the site but no excavated pits, ponds, or lagoons were noted. Ground stains in the southwest corner of the site suggested liquid waste dumping. There were no disposal pits, ponds or lagoons observed in 1964. By 1967 the malt processing building had been dismantled and piles of rubble were noted throughout the site. A large solid waste landfill was at the north end of the site. By 1973 the disposal pit had been covered and a large waste burial mound had been deposited in the northern portion of the site. A group of objects, possibly containers or drums, were observed in the southwest corner of the site. The 1976 photograph showed all but eight of the concrete storage silos destroyed and a new building had been constructed in the central portion of the site near two pits containing liquid. By 1980 no solid or liquid disposal activity was noted. The site was abandoned, the disposal mounds closed, and vegetation was overgrowing the site on the 1983 photograph.

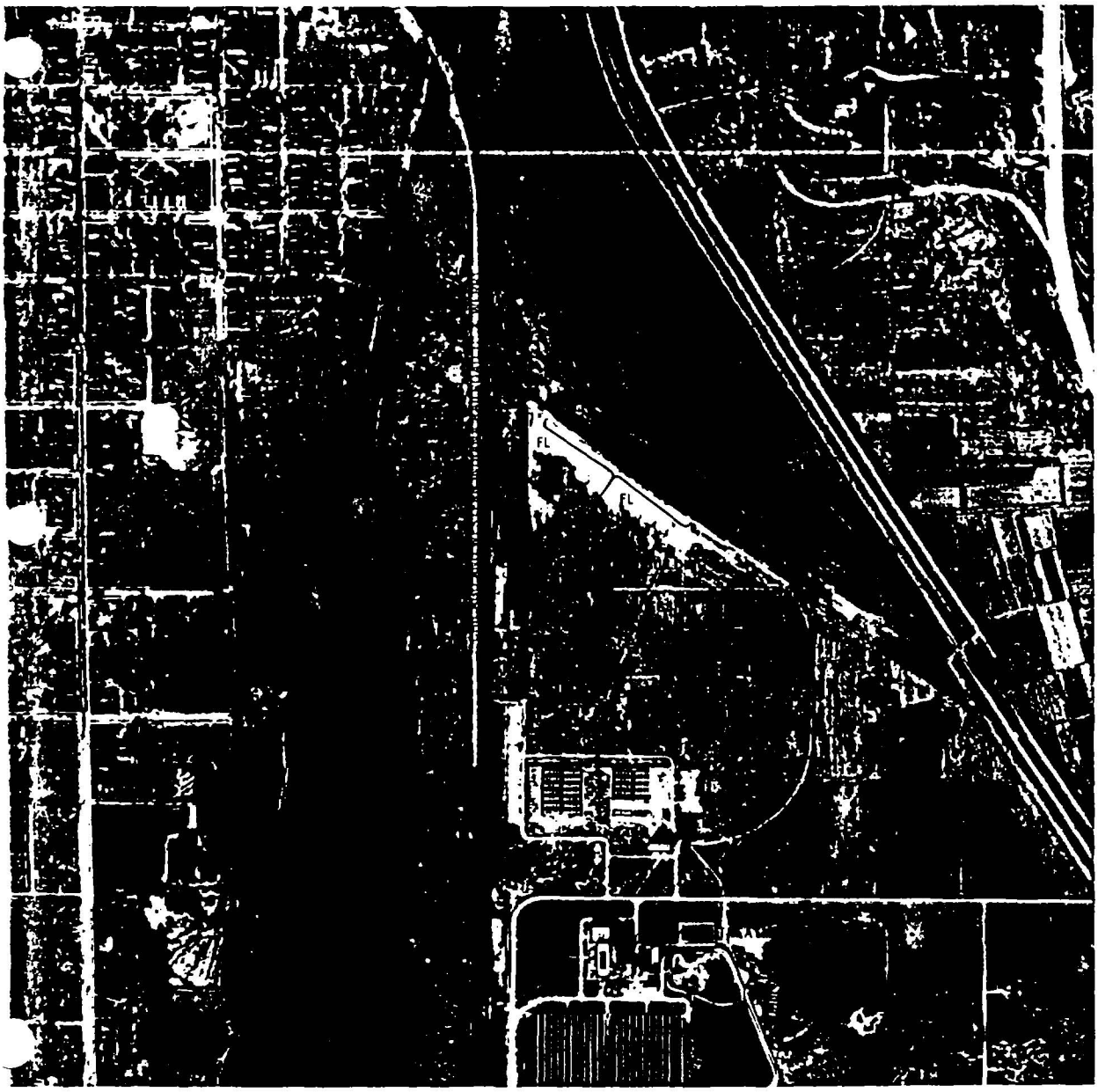
The U.S. Scrap facility is within one mile of the Little Calumet River (see Figure 2); however, it does not appear within this river's 100-year flood zone and is unlikely to be threatened by flood waters draining into Lake Calumet.

PHOTO ANALYSIS

NOVEMBER 14, 1938

The 1938 photograph (Figure 3) reveals the condition of the study area prior to the establishment of the U.S. Scrap facility. The site is in southern Chicago approximately 1 mile west of Lake Calumet and covers approximately 4.5 acres. The property contains a malt processing building (annotation A), 12 attached concrete storage silos (annotation B), and additional smaller storage buildings (annotation C). The raised rail bed of the Chicago and Western Indiana Railroad is along the site's west perimeter and is a barrier to surface drainage. On the east of the study site is a sewage treatment plant of the Metropolitan Sanitary District of Greater Chicago. Surface runoff within the site generally flows north to a terrain depression (annotation D).

There is no visible solid or liquid waste disposal activity at the site and no vehicles or service equipment to suggest the malt processing plant is still operational. No pits, ponds, or lagoons are observed at the site. There is earthmoving activity noted northeast of the site but this appears to be fill material used to raise the low terrain in that area (annotation E).



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WL WETLAND

Figure 3. U.S. Scrap, November 14, 1938. Approximate scale 1:7,500.

MARCH 29, 1952

Ground scars from excavation activity are noted at the north end of the site (annotation A). There is no visible solid waste or signs of waste disposal activity. No pits, ponds, or lagoons are discerned at this facility.

There has been construction and earthmoving activity at the adjacent sewage treatment plant with the addition of more waste lagoons. Fill material has continued to be dumped at the north end of the sewage plant causing a mound to grow in that area (annotation B).

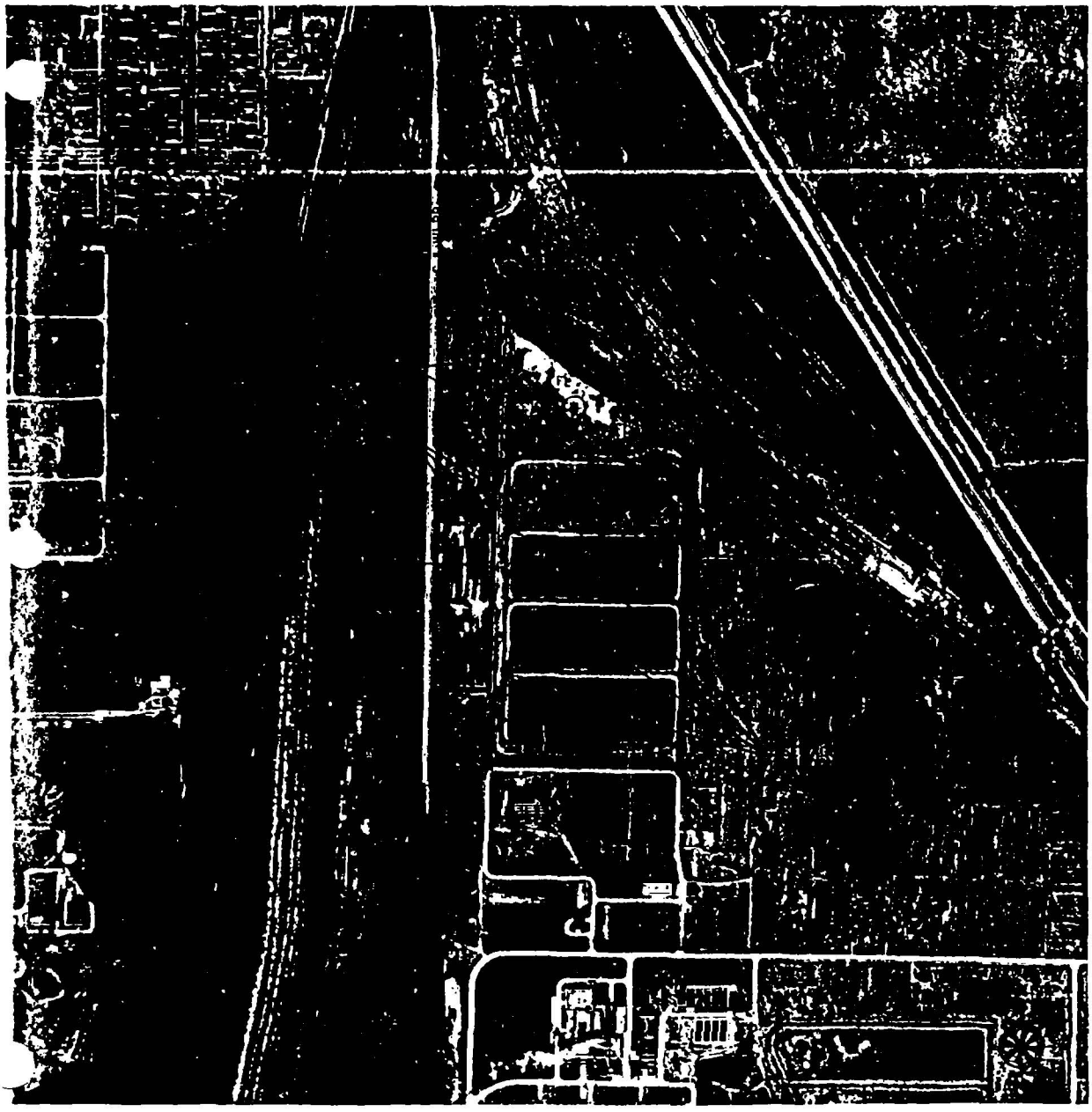


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Figure 4. U.S. Scrap, March 29, 1952. Approximate scale 1:6,300.

SEPTEMBER 14, 1959

The 1959 photograph (Figure 4) shows very little change to closed malting facility. Dumping of fill material and other debris is now evident at this site. Light-toned ground stains at the southwest corner of the site suggest liquid dumping (annotation A); however, no earthmoving vehicles or waste hauling trucks are visible.

Additional dumping of fill material northeast of the study site has continued (annotation B).

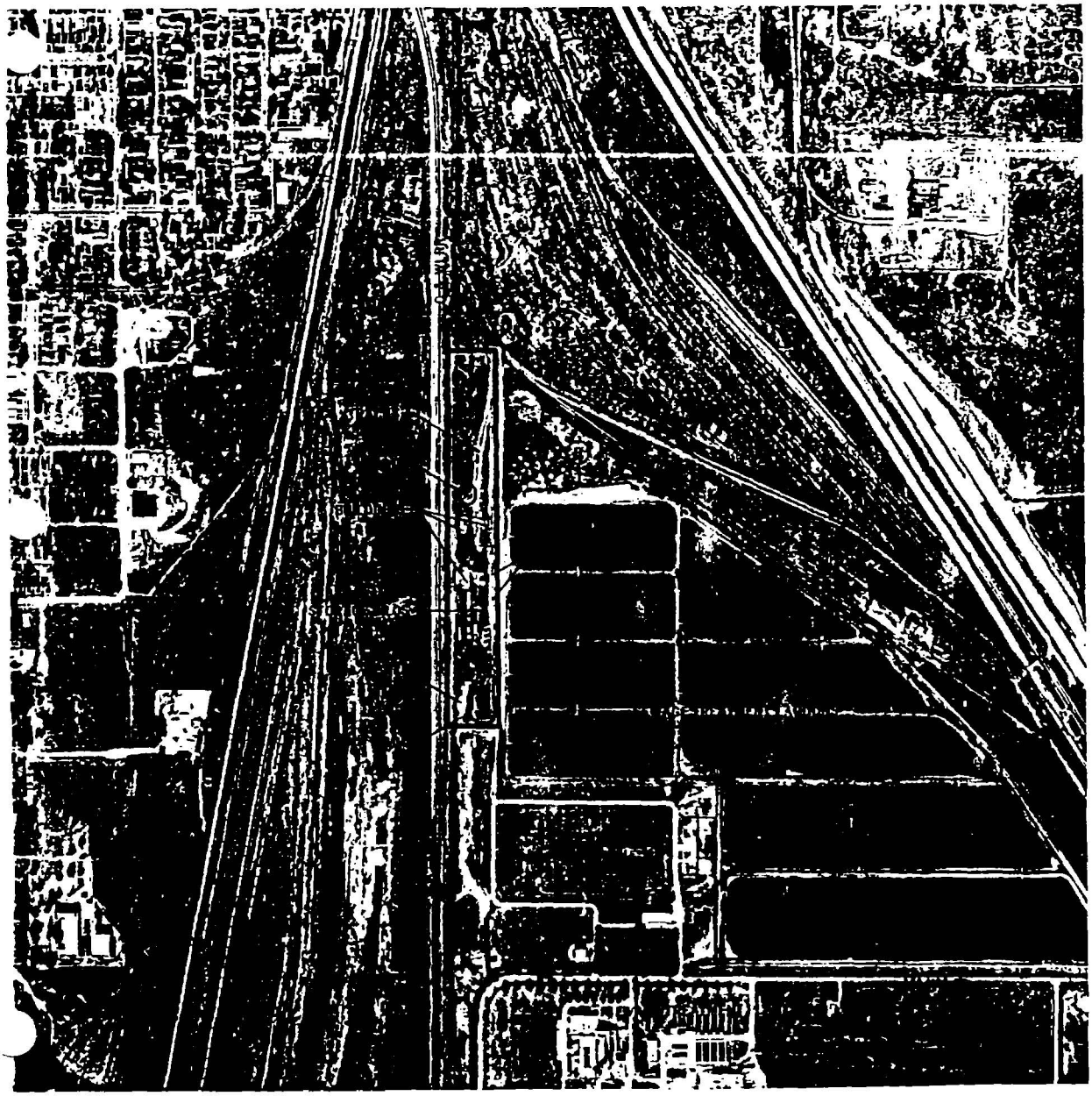

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Figure 5. U.S. Scrap, September 14, 1959. Approximate scale 1:6,100.

APRIL 25, 1964

The piles of fill and/or debris around the southern portion of the study site have been removed or have been leveled (annotation A); the ground stains reported in 1959 (Figure 5, annotation A) are absent. The 1964 site (Figure 6) does not have any visible pits, ponds, or lagoons, and no signs of liquid waste dumping.

Outside the site earthmoving activity is noted, especially northeast of the site (annotation B) and directly south of the site (annotation C). This earthmoving does not appear to be associated with waste disposal but is probably from construction at the sewage treatment facility.

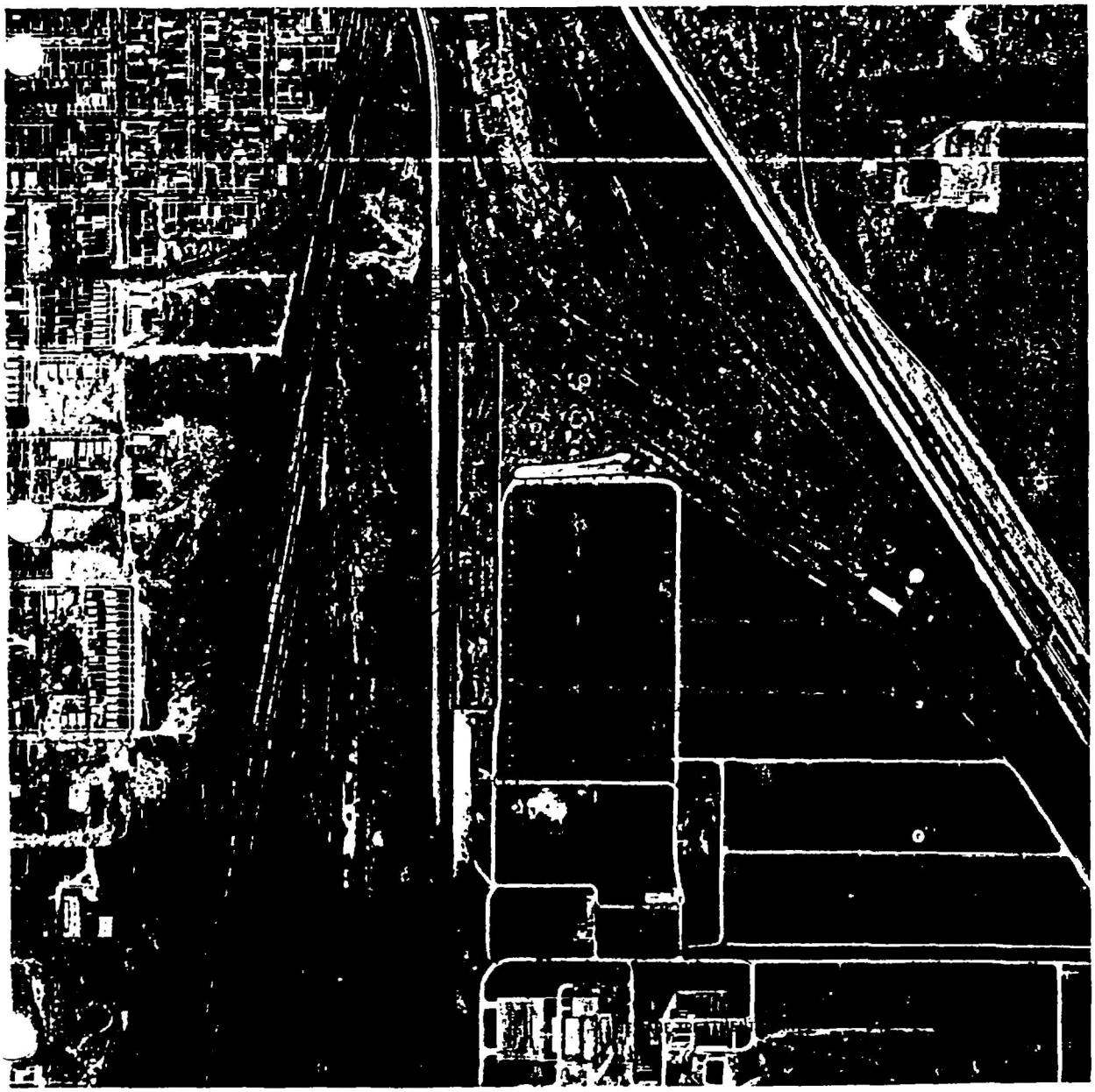

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Figure 6. U.S. Scrap, April 25, 1964. Approximate scale 1:6,100.

AUGUST 28, 1967

The 1967 photograph (Figure 7) shows the study site is now an active waste d osal facility. The abandoned malt processing building has been dismantled but the 12 concrete storage silos remain standing. The area around the building foundation is covered with construction rubble and piles of debris. A large pit has been dug at the north end of the facility (annotation A). A mound of light-toned rubble, fill, and waste lies along the north and west sides of the pit (annotation B). The bottom of this pit appears to contain dark liquid. Numerous vehicles are visible throughout the facility showing a high level of activity.

Large mounds of fill have been deposited to the south (annotation C) and northeast (annotation D) of the facility. This earthmoving activity is apparently associated with the construction of another sewage treatment lagoon (annotation E).

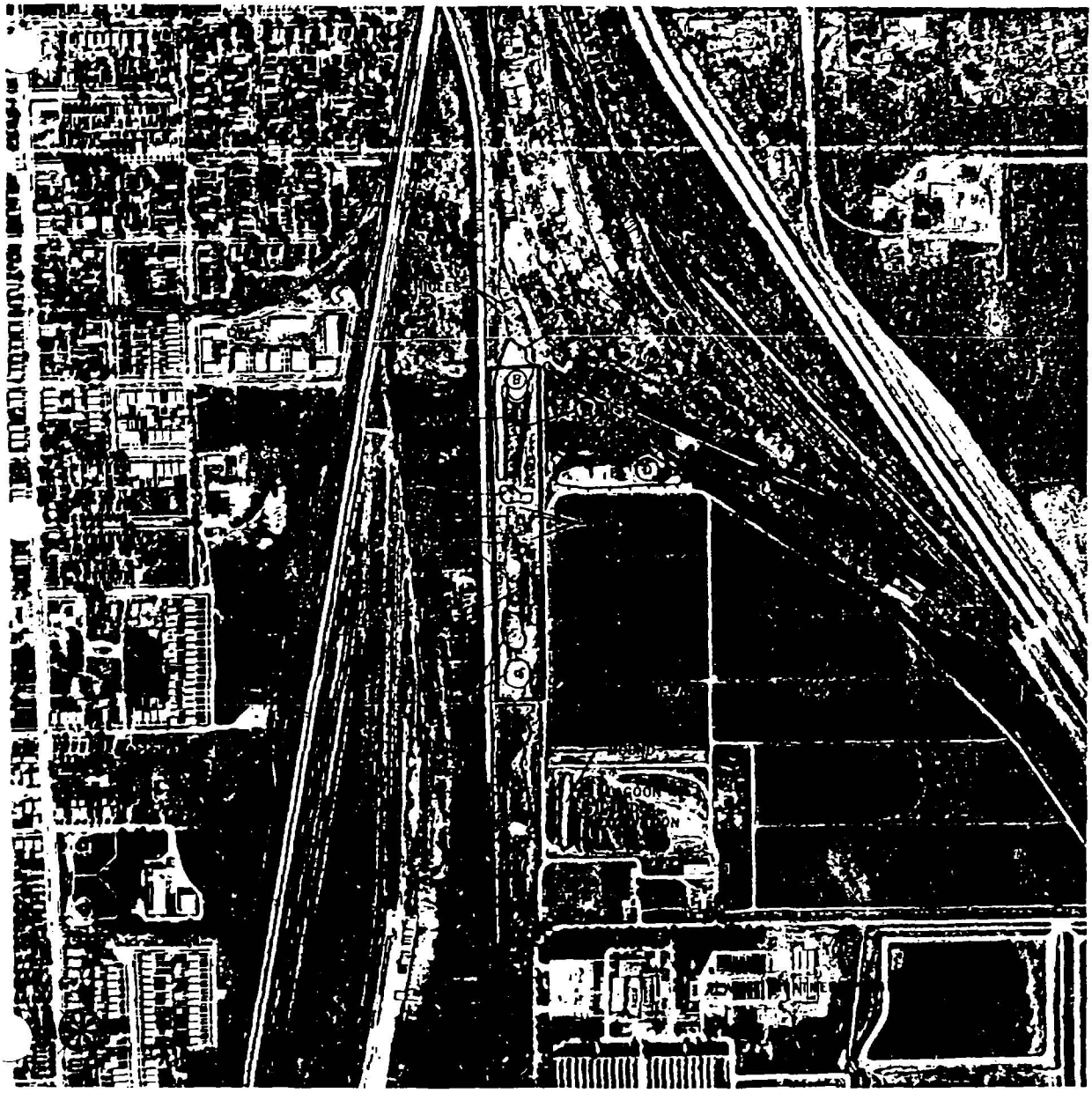

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Figure 7. U.S. Scrap, August 28, 1967. Approximate scale 1:6,700.

APRIL 23, 1973

This 1973 photograph (Figure 8) reveals the U.S. Scrap facility continues to r ive solid waste for disposal. The large disposal pit at the north end of the site on the 1967 photograph (Figure 7, annotation B) is filled, currently a large mound of covered waste is in this area. Numerous vehicles are observed throughout the site. A group of objects in the southwest corner of the site could not be identified but are possibly containers or drums. Piles of fill and/or debris are observed at the south end of the site.

The mound of buried solid waste in the northern portion of the study area has changed the surface drainage patterns within the site to flow southward. There are no visible liquid waste lagoons or trenches.

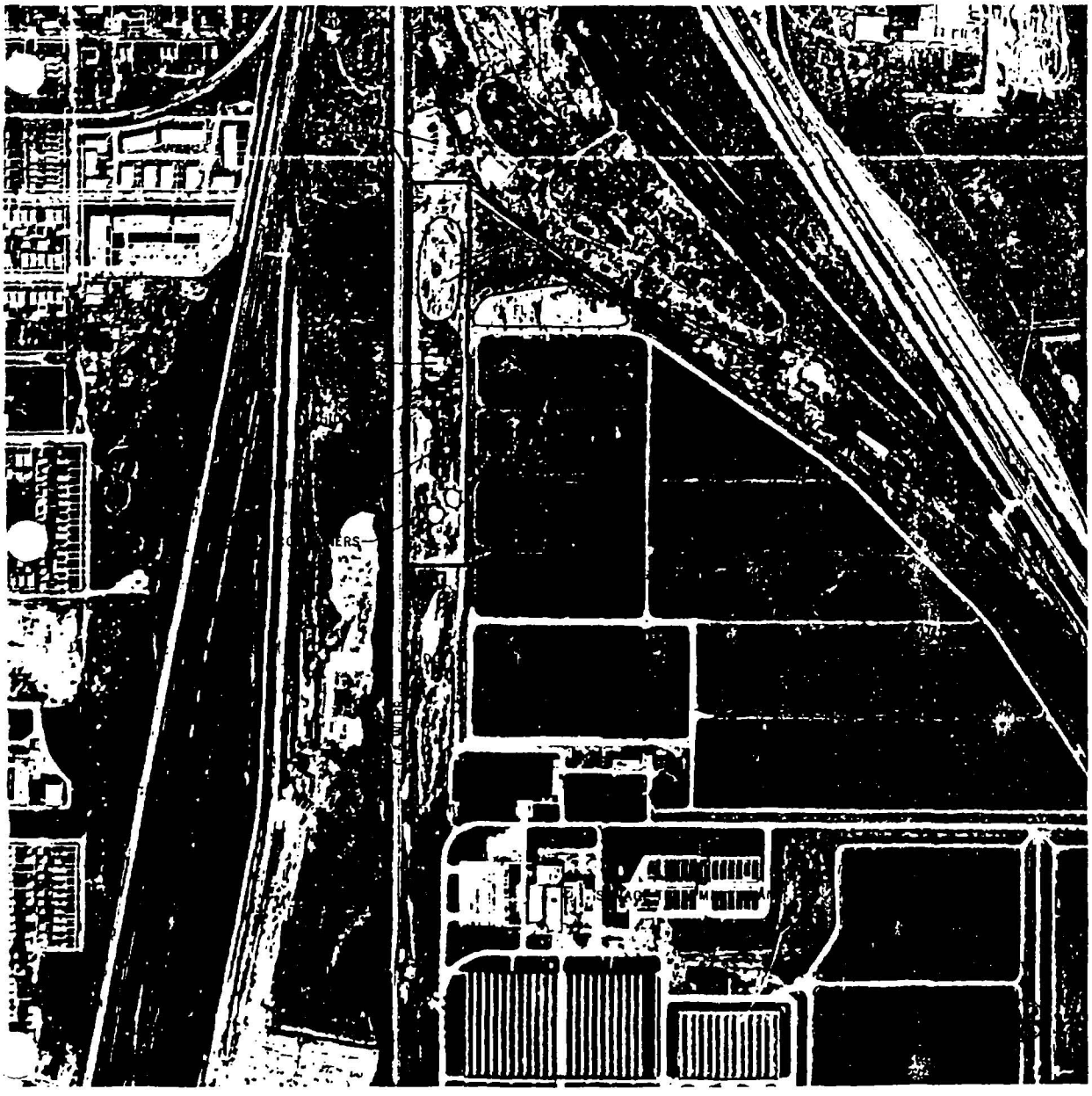

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Figure 8. U.S. Scrap, April 23, 1973. Approximate scale 1:5,800.

APRIL 7, 1976

The 1976 photograph (Figure 9) shows the burial of solid waste at the northern portion of the site (annotation A) has ceased. A few vehicles at the site suggest limited waste disposal activity. Piles of irregular-toned material, fill, rubble, or wastes are visible in the central portion of the site.

A drainage ditch travels along the site's east perimeter and discharges into two small pits at the center of the facility (annotation B); this ditch also continues to flow to the south end of the site. There is a berm along the south end of the facility to retain this runoff.

More dismantling has occurred, 4 large concrete storage silos have been demolished leaving 8 out of the original 12, still standing (annotation C). The smaller buildings on the north side of the original malt processing building (demolished by 1967) are also absent. A newly constructed smaller building is in the central portion of the site (annotation D).

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Figure 9. U.S. Scrap, April 7, 1976. Approximate scale 1:5,800.

NOVEMBER 22, 1980

The 1980 photograph (Figure 10) reveals little significant change at U.S. Scrap since 1976 (Figure 9). Vehicle tracks suggest limited activity; however, there are no open landfills in operation. Liquid is observed in two small pits at the center of the site (annotation A); however, there is no visible indication of liquid waste dumping. No leachate seepage or signs of vegetation damage are discernible.

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Figure 10. U.S. Scrap, November 22, 1980. Approximate scale 1:6,200.

JULY 22, 1983

The 1983 photograph (Figure 11) shows no significant changes at the study area s e 1980 (Figure 10). The southern portion of the site now has vegetation overgrowth suggesting the site is abandoned. Surface runoff continues to collect at the site's south end. The vegetation around the landfill disposal mound at the north end of the site is irregular. Piles of debris are still visible but these too are becoming overgrown. The two small pits/depressions at the center of this abandoned facility contain standing liquid (annotation A). No signs of leachate seepage associated with disposal activity at this site are identified.

INTERPRETATION CODE

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- WD WASTE DISPOSAL AREA
- WL WETLAND

Figure 11. U.S. Scrap, July 23, 1983. Approximate scale 1:12,000.